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Session 7.1



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Harvest and Post-harvest management under Organic Farming

- **Harvesting**

1. Identify the appropriate harvesting method
2. Harvest the crop at appropriate stage
3. Harvest the crop at right time
4. Harvest the crop based on use and distance from the market



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Harvesting

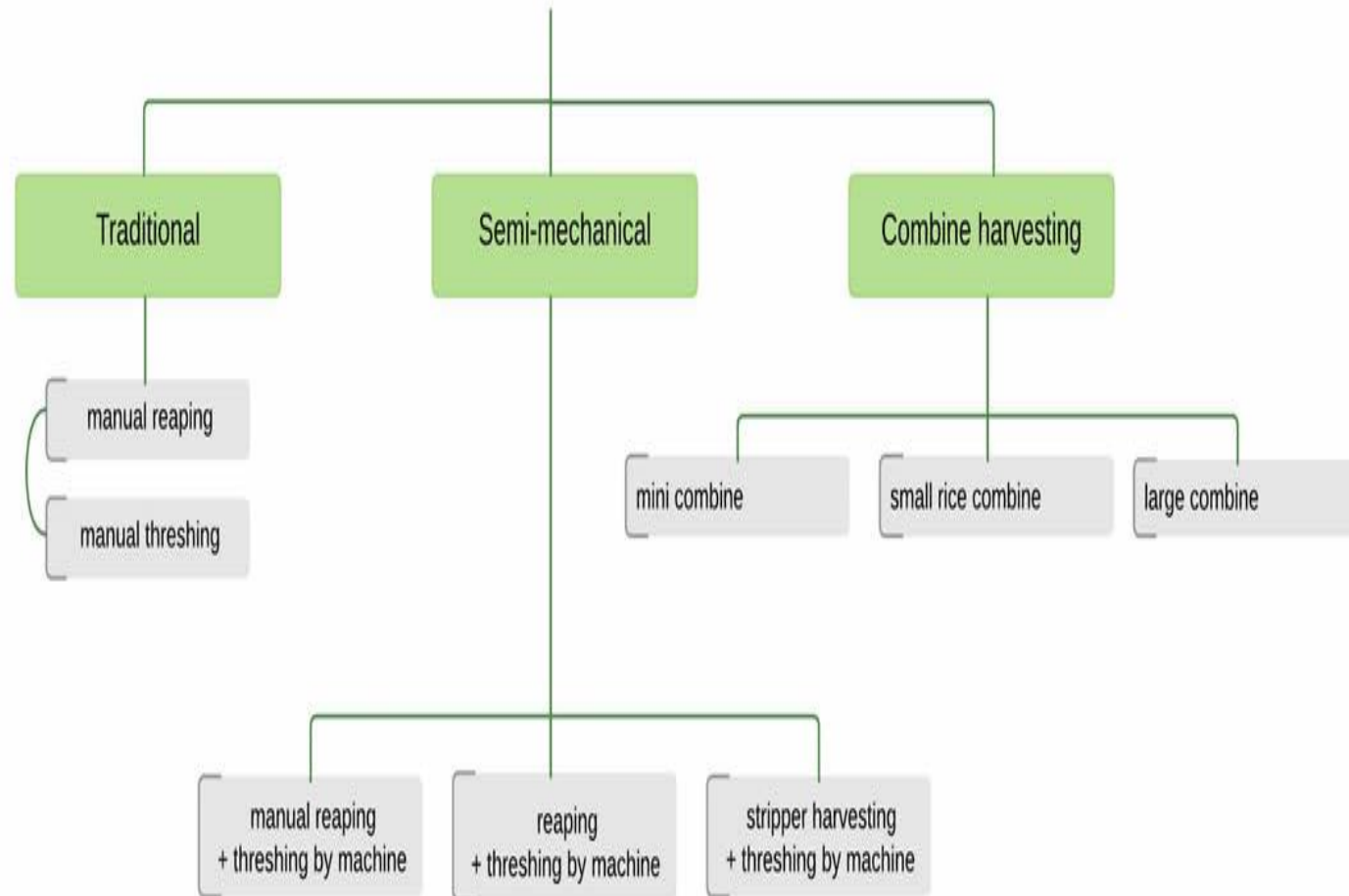
- Harvesting is the process of removal of entire plants or economic parts after maturity. The economic product may be grain, seed leaf, root or entire plant. The remaining portion of the stem that is left on the field after harvest is known as stubble.



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Harvesting Systems





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S.No	Crops	Maturity Symptoms and Criteria for harvesting
1	Rice	1. 32 days after flowering. 2. Green grains not more than four to nine per cent 3. Percentage of milky grains less than one per cent. 4. Moisture content of grains less than 20 per cent 5. 80 per cent panicles straw coloured and grains in lower portion of panicle in hard dough stage. At least five hills are to be studied at maturity
2	Sorghum	1. 40 days after flowering. 2. Grain moisture content less than 28 per cent 3. Yellow coloured ears with hard grains
3	Pearl Millet	28 to 35 days after flowering Compact ears, on pressing hard seeds come out
4	Finger millet	Brown coloured ears with hard grains
5	Maize	1. Less than 22 to 25 per cent moisture in grain. 2. Husk colour turns pale brown 3. 25 to 30 days after tasseling
6	Wheat	About 15 per cent moisture in grain Grains in hard dough stage Yellowing of spikelets
7	Sugarcane	1. The ratio of brix between top and botton part of cane nearly one. 2. Brix 18 to 20 per cent 3. Sucrose 15 per cent
8	Redgram	1. 35 – 40 days after flowering. 2. 80 – 85 per cent of pods turn brown
9	Blackgram Greengram	Pods turn brown or black with hard seeds inside pods
10	Groundnut	1. Pods turn dark from light colour. 2. Dark coloured patches inside the shell. 3. Kernels red or pink 4. On pressing the kernels, oil is observed on fingers
11	Cotton	Bolls fully opened
12	Sugarcane	Leaves turn yellow, sucrose content more than 10 per cent and brix reading more than 18 per cent



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Choosing an appropriate harvesting system depends on a number of factors:

- Availability of labor (manual harvesting is labor-intensive)
- Availability of capital to purchase equipment
- Timeliness of harvesting (how much time is available to complete the harvest)
- Field layout and field accessibility (combine harvesters require a certain field layout and access)
- Rice variety (some varieties are more prone to lodging)
- Demand for quality rice
- Demand for straw (certain threshers damage the straw making it less marketable)



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Method	Description	Advantages	Disadvantages
1. Manual reaping and threshing	<ul style="list-style-type: none"> •Cutting, stacking, bundling, handling and piling by hand •Threshing by beating •Cleaning by winnowing 	<ul style="list-style-type: none"> •Efficient •Most effective in lodged crop •Winnowing/cleaning necessary •Less weather dependent 	<ul style="list-style-type: none"> •High labor cost- Skill dependent •Susceptible to grain damage
2. Manual reaping and threshing by machine	<ul style="list-style-type: none"> •Cutting and stacking by hand •Threshing by machine •Cleaning by machine or by hand 	<ul style="list-style-type: none"> •More effective in wet season harvest-wet crop conditions •Higher capacity than manual •Lower labor requirements •Less dependent on field size 	<ul style="list-style-type: none"> •Higher capital cost •Dependency on the availability of contractor
3. Reaping and threshing by machine	<ul style="list-style-type: none"> •Reaping by machine •Threshing by machine •Cleaning by machine or hand 	<ul style="list-style-type: none"> •Higher capacity than manual •Lower labor requirements •Less dependent on field size 	<ul style="list-style-type: none"> •Higher capital cost •Dependency on the availability of contractor
4. Stripper harvesting and threshing by machine			
5. Combine harvesting			
Standard Combine-harvester	<ul style="list-style-type: none"> •Harvesting, threshing, and crop cleaning are done mechanically •Cutter-bar cuts crop, while conveying system feeds crop into the threshing and cleaning systems •Threshing drum tip speed ranges from 20 to 25 m/s 	<ul style="list-style-type: none"> •High throughput; timeliness •Produces Clean grain •Spread straw back in the field •Multi-crop ability (often used for wheat) 	<ul style="list-style-type: none"> •Higher Cost •More straw left behind in the field •Less effective in partially lodged crop •Can not be used for Basmati rice
Combine-harvester with stripper-header	<ul style="list-style-type: none"> •Same as above except a stripper header is used instead of a cutterbar 	<ul style="list-style-type: none"> •Highest throughput •Less power required for subsequent threshing and cleaning operations •Can start threshing earlier in the day 	<ul style="list-style-type: none"> •High Cost •Not suited for small, muddy Asian fields •Problems in lodged crop
Head-Feed Combine	<ul style="list-style-type: none"> •Cutterbar cuts crop, conveying system "holds" on to the straw and feeds only the panicles into the thresher •Threshing drum tip speed 15 m/s 	<ul style="list-style-type: none"> •High mobility •Can operate in small fields •Less power required for threshing/cleaning •Ideal for hard-to-thresh varieties •Straw cutting/chopping is easier 	<ul style="list-style-type: none"> •High Cost •Low throughput •Pick-up reel not suited for indica and other high-shattering varieties •Complex machine
Axial Flow combine	<ul style="list-style-type: none"> •Similar to Conventional combine harvester, except an axial flow type thresher is used. 	<ul style="list-style-type: none"> •High Throughput •Axial-flow threshing system ideal for tropical conditions •Works with Basmati rice 	